

COSMOS

by Carl Sagan
A Personal Voyage

Cosmos, a joint project of Carl Sagan Productions and KCET, Los Angeles, is made possible on Public Television by grants from the Corporation for Public Broadcasting, The Arthur Vining Davis Foundations, and ARCO—Atlantic Richfield Company

COSMOS: AN APPRECIATION

by Dr. Carl Sagan

Dr. Carl Sagan, distinguished Cornell University astronomer and Pulitzer Prize-winning author, is the host and co-author of COSMOS, the weekly series devoted to astronomy and space exploration in the broadest possible human context, which will have its world premiere at 8:00 PM, ET, on Sunday, September 28 on the Public Broadcasting Service (PBS). (Editors: Please check your local PBS station schedule for correct area broadcast time and date.) COSMOS, made possible by grants from ARCO -- Atlantic Richfield Company, the Corporation for Public Broadcasting, and The Arthur Vining Davis Foundations, is a joint production of Carl Sagan Productions and KCET, Los Angeles.

We live in a time dominated by science and technology and yet it sometimes seems that almost no one understands very much about science and technology. This is a clear prescription for disaster, especially in a democracy.

We humans have always been scientists and technologists. A million years ago, our ancestors were paying close attention to the hardness, shape, and composition of rocks, because the chipping and flaking, cutting and polishing of stone tools was the means for our survival. There were schools which taught the best methods of making

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such tools. There were probably competitive examinations and passing and failing grades and a triumphant sense of discovery all taking place on the grassy savannahs of East Africa where our ancestors grew up.

They must also have known that soaring delight in discovery, the joy in understanding a deep thing well, which is the emotional heart of science. These emotions are necessary for survival. They are built deeply into us. We are all of us scientists.

Something has happened to discourage people from science. In part, it must be the huge advances in science in the last few centuries which have made it so formidable a body of knowledge. Another is the fact that science treats the world as it really is, not as our pre-dispositions would have it: it is sometimes wrenching to discover that the world does not perfectly correspond to how we would wish it to be.

Some disaffection from science has surely come from the fact that technology has provided us the tools for our own destruction. However, that is a very shortsighted view of our problems, since the only conceivable solution to these problems also lies through science and technology.

Finally, some of the responsibility for public uneasiness about science derives from the deficiencies in the presentation of science in the schools; from the lack of enthusiasm for popularization exhibited by some scientists; and particularly from the mass media, which have an enormous and almost untapped potential for a rich, dramatic and comprehensible exposition of science.

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Recently there have been a number of encouraging signs. Science fiction books, magazines, television programs, and motion pictures -- especially with space exploration as a theme -- are burgeoning. Daily newspapers have been adding science sections and science columnists. A spate of excellent popular magazines devoted entirely to science have appeared or have been announced. And a few first-class science-oriented programs have appeared on public television.

COSMOS is an experiment -- a hopeful one -- in the communication of science to general audiences of all ages. Precisely because we have such a long cultural and biological history in which we had to figure things out, I believe there is a natural resonance between the endeavor of science and the way we -- all of us -- think. We long to understand. We hunger to know the origin of the world and ourselves. The deepest cosmological questions are imbedded in human folklore and myth, superstition and religion.

But now we live in an age where the fundamental questions -- about the nature of matter, the origin of life and consciousness and intelligence, the beginnings and ends of worlds and universes -- are being approached rigorously and scientifically. We have an opportunity to satisfy that passion to know.

In COSMOS, we have tried to speak not just to the mind but also to the heart; not only to describe the conclusions of science, but also to say something of the mode of thinking, the tested approach of science. We aim to show that an appeal to the spirit, a resonance with deep human emotions, a delight in music and art are

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all consistent with -- indeed a fundamental part of -- the scientific enterprise.

The COSMOS television series is full of facts and conjectures. But I would be very pleased if viewers left the entire COSMOS series without remembering a single fact -- provided they found rekindled some of that ancient human joy in understanding the natural world, in the celebration of Nature.

We also hope that COSMOS will encourage others in repopularizing science and in improving general public understanding of why it is essential to support fundamental advances in science. Basic science is the seed corn of our modern society. If we eat the seed corn, we may survive one more winter without working very hard. But there will be little hope for us in the winters to come. It is our job to plant and nurture the seed corn and to arrange for a fair distribution of the crops at harvest time.

COSMOS began during the Viking exploration of Mars, the first long-term mission to the surface of another planet. B. Gentry Lee, the Viking Director of Mission Testing and Data Analysis and I were unhappy with the mass media's tepid depiction of this historic expedition. In late 1976, Lee and I decided to form a production company dedicated to communicating science in an accurate and exciting way. Of several offers tendered to us, that of KCET -- to produce a thirteen-part television series on astronomy -- seemed by far the most challenging and the most promising. Soon, KCET was soliciting underwriters, Lee and I were interviewing candidate executive producers, and talking to scientists, writers, and artists: the project was underway.

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In a project of this magnitude, it is impossible to thank all of those -- the number must certainly be more than a thousand -- who have made a significant contribution. But I would especially like to thank B. Gentry Lee, the Vice President of Carl Sagan Productions; Chuck Allen, Greg Andorfer, William Lamb, and James Loper of KCET for the station's unstinting support; Ann Druyan and Steven Soter, my full collaborators in the writing of the COSMOS television series; and the COSMOS television production staff -- especially senior producers Geoffrey Haines-Stiles, David Kennard, and Executive Producer Adrian Malone -- for brilliant contributions in every phase of production.

I am grateful to the COSMOS chief artist Jon Lomberg; artists John Allison, Brown (cq), Don Davis, Adolf Schaller, and Rick Sternbach; Donald Goldsmith, Owen Gingerich, and a hundred other scientists who generously gave of their time and expertise to make COSMOS as accurate as possible while preserving its comprehensibility; Shirley Arden, my executive assistant; and the extremely capable public relations staff of Ben Kubasik Inc.

And my thanks go to the COSMOS underwriters -- Atlantic Richfield Company, the Corporation for Public Broadcasting, The Arthur Vining Davis Foundations -- and our co-producers, the British Broadcasting Corporation and Polytel International.

I believe that a thousand years from now our descendants will look back on our time and marvel that in so critical, confused, and dangerous an age we were able to avoid self-destruction and take

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decisive steps to understand that vast cosmic ocean of which we are a tiny part. Perhaps by increasing public awareness that science is a characteristically human activity and a basic tool for our survival, the thousand people who helped make COSMOS possible will have made some small contribution to those great objectives.